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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SONG, JASMINE

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 04/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No:

09/372,296

Applicant(s)

KOKER ET AL.

Examiner

Jasmine Song

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/9/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Detailed Action

1. This non-final rejection is in response to the appeal Brief filed on 01/09/2002.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Drawings

3. Figure 2 is objected to because it is not clear whether the system includes a cache since there is no cache shown in the figure. There is a cache controller 230, but no actual cache is shown. If the cache controller merely controls the cache queue (which functions like a FIFO), then perhaps renaming the cache queue to be simply "queue" and renaming the cache controller to be "queue controller" would be appropriate. On the other hand, if a cache exists in the system but is not shown, applicant needs to amend the figure to clearly show the cache (and point out support in the specification if the cache is mentioned there). If this is the case, it would appear that the cache controller 230 controls a cache, and cache queue 280 functions to provide prefetch data for the cache.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 recites the limitation "the bus" in lines 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1,4-5,8 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Greiner et al., U.S. Patent 6216208.

Regarding claim 1, 8 and 15, Greiner et al. teach a system comprising:

a memory (col.2, lines 15-16 and lines 56);

a bus (Fig. 1, element 300); and

a bus access circuit (Fig.1, element 100) coupled to the memory and the bus to reduce latency in accessing the memory from the bus, the circuit comprising:

a pre-fetcher to pre-fetch a plurality of data from the memory to a cache queue (Fig.1, element 162) in response to a request (col.2, lines 59 to col.3, lines 32), and

a cache controller (Fig.2, element 170) coupled to the cache queue and the pre-fetcher to deliver the pre-fetched data from the cache queue to the bus independently of the memory (col.5, lines 46-58).

Regarding claim 4, Greiner et al. teach that determining if the request is valid and processing a cache miss request if the request results in a cache miss is taught as the internal queue monitors the requests issued by the arbiter, and monitors data held by the cache to determine whether a copy of the requested location is held in the cache (col.2, lines 54-62).

Regarding claim 5, Greiner et al. teach that the processing of the cache miss request comprises: Providing a purge signal, marking an entry in a scheduler according to the purge signal; purging data corresponding to the marked entry (Fig.3, step 1030-1070-1090 and col.5, lines 7-17); and placing the request to the memory controller (col.5, lines 37-49).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-3,9-12 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greiner et al., U.S. Patent 6216208, in view of Kasper, U.S. Patent 6356962.

Regarding claim 2, 9 and 16, Greiner et al. teach the claimed invention (claims 1,8 and 15) and the request causes the memory controller transferring the plurality of data to the cache queue (col.2, lines 59 to col.3, lines 32), the request being buffered in a request queue (Fig.1, element 130 and col.2, lines 37-38).

Greiner does not teach that a watermark monitor is used to determine if an amount of data in the cache queue is above a predetermined level, if not, the request causing the memory controller to transfer the plurality of data to the cache queue.

However, Kasper teaches that a watermark is used to determine if an amount of data in the cache queue is above a predetermined level, if not, the request causing the memory controller to transfer the plurality of data to the cache queue (col.4, lines 7-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a watermark monitor to indicate that sufficient storage exists in the FIFO memory to receive additional data as taught by Kasper in the

Greiner's system because it effectively increases bus and memory resource utilization (col.3, lines 35-42 and col.1, lines 9-11).

Therefore, one having ordinary skill in the art at the time the invention was made would have been motivated to provide a watermark monitor in the Greiner's system because it would provide a "window" into the FIFO memory (col.3, lines 52-53) allowing the controller to transfer the data to the FIFO memory.

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claims 3,10 and 17, Greiner et al. teach transferring the data from the cache queue to the bus if the data in the cache queue are ready. It is obvious that the data are transferred when the data are ready because the data must be ready before they are transferred (col.5, lines 46-58).

Regarding claims 11 and 18, Greiner et al. teach a peripheral bus controller (Fig.1, element 110) coupled to the bus (Fig.1, the line connected 110 and 130) and the pre-fetcher (Fig.1, element 160) to determine if the request is valid (col.2, lines 54-62);

a data coherence controller (Fig.2, element 170) coupled to the pre-fetcher to provide a purge signal (a buffer entry pointed by a pointer, col.5, lines 7-17) when the request corresponds to a cache miss (col.5, lines 7-17 and col.2, lines 54-62); and

a scheduler (Fig.2, element 110) coupled to the request queue (Fig.1, element 130) and the data coherence controller (Fig.2, element 170) to store entries corresponding to the requests, the entries being marked according to the purge signal from the data coherence controller (Fig.3, step 1030-1070-1090 and col.5, lines 7-17).

Regarding claims 12 and 19, Greiner et al. teach processing the cache miss request comprises:

a data mover (Fig.1, element 140) coupled to the cache queue and the scheduler to transfer data from the memory to the cache queue (col.2, lines 59 to col.3, lines 32), the data mover purging data corresponding to a marked entry from the scheduler (Fig.3, step 1030-1070-1090 and col.5, lines 7-17);

9. Claim 6-7, 13-14 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greiner et al., U.S. Patent 6216208 B1.

Regarding claims 6, 13 and 20, Greiner teaches the claimed independent claims as noted above. Greiner does not teach that the bus is a peripheral component interconnect bus (PCI bus). Official notice is taken that it is well known in the art that PCI bus is one of the most widely used types of buses. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use PCI bus in Greiner's bus system because PCI bus is an industry standard bus.

Regarding claims 7,14 and 21, Greiner teaches the claimed independent claims as noted above. Greiner does not teach that the request is one of a 32-byte and a 64-byte requests. it is well know in the art that 32-byte or 64-byte data request is commonly used. It is also an obvious matter of design choice to use one of a 32-byte and 64-byte requests in Greiner's requested data, since these are power of 2.

10. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111 (c).

11 When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasmine Song whose telephone number is 703-305-7701. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Do H. Yoo can be reached on 703-308-4908. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Jasmine Song 

Patent Examiner

April 17, 2002



DO HYUN YOO
SUPERVISORY PATENT EXAMINER
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